

In this Reply, no claims have been amended, added or cancelled. No matter has been added.

According to the Examiner regarding Hucke:

Hucke teaches in columns 28-30 optionally graphitizing and re-impregnating the pores with water. It appears that water impregnates the graphite; no differences are seen. The properties not disclosed are deemed met since it is a high porosity graphitic material.

Applicants respectfully disagree with the above. Hucke discloses production of cohesive bodies with controlled porosity by blending a carbon yielding binder, a pore forming liquid, and a dispersant; casting the mixture thus formed into a desired configuration; consolidating the cast material to form a self-supporting, physically handleable body; and heating the body to form a cohesive carbon mass.

Although Hucke discloses pyrolyzing the composite bodies to temperatures as high as 2400 C (col. 28, lines 33-34) and refers to "graphitization" of the composite to an "extent" (col. 28, line 66-68), the composite formed is not Applicants' claimed essentially graphitic foam as recited in claim 56. As noted in the Reply to Office Action filed on Feb. 10, 2003, those having ordinary skill in carbon science recognize that a high temperature heating step (e.g. at least 2500 K) is required, but may not be sufficient to convert a carbon foam to an essentially graphitic carbon foam. The term "graphitization" has generally been used by ordinary artisans in the field of carbon foams to indicate only that a high temperature heat treatment (e.g. at least 2500 K) has been applied to a carbon foam material. Indeed, a "graphitization" step does not even necessarily produce graphite. Moreover, even if a graphitization step produces some graphite, and even if a graphitic structure results, the resulting foam may still be thermally insulating.

Hucke's carbon composite cannot provide a sufficient concentration of graphite to be considered Applicants' claimed essentially graphitic carbon foam as claimed in claim 56 based on his disclosure appearing from col. 29 line 67 to col. 30, line 3. In this specification portion Hucke discloses that the bodies formed "are often of carbon so hard that it will scratch glass." Glass is known to have a Mohs hardness of 7. Thus, Hucke's carbon material must have a Mohs hardness greater than 7 to scratch glass. This is a clear indication to one having ordinary skill in the art that Hucke's material is not essentially graphitic because graphite is soft (1 to 2 on the Mohs scale), not hard. Thus, Applicants' essentially graphitic foam material is a very soft material as compared to carbon material having little or no graphite. Graphite's low hardness and ease of cleavage is what makes it so useful for pencil lead and for use as a dry lubricant. Hence, by Hucke's own description regarding the hardness of his material, the material may include some limited graphite, but is clearly not an essentially graphitic foam material. Accordingly, Applicants submit that claim 56 and all claims dependent thereon are patentable claims.

As noted earlier in this case, even an essentially graphitic carbon foam may still be thermally insulating and may lack the long range crystallographic order and high fraction of perfect graphene layers. Thus, claims 60, 65, 69, 72, 80, 128 and 131 which recite thermal conductivity parameters consistent with a thermally conductive carbon foam each add additional patentable subject matter. Similarly, the X-ray diffraction derived crystal parameters recited in claims 66, 71, 78 and 81 also add additional patentable subject matter.

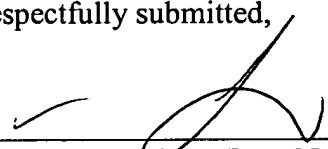
Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. However, Applicants invites the

Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance.

No fees are believed due with the filing of the above Reply. However, the Commissioner for Patents and Trademarks is hereby authorized to charge any deficiency in any fees due with the filing of this paper or credit any overpayment in any fees paid on the filing, or during prosecution of this application to Deposit Account No. 50-0951.

Respectfully submitted,

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